

TECHNICAL MEMORANDUM NO. 1

ADDENDUM TO FINAL PHASE 1 RFI/RI WORK PLAN

ROCKY FLATS PLANT
WALNUT CREEK PRIORITY DRAINAGE
OPERABLE UNIT NO. 6 (OU 6)

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS PLANT
GOLDEN, COLORADO

ENVIRONMENTAL RESTORATION PROGRAM

December, 1992

ADMIN RECORD

A-0006-000067

REMOVED FOR CLASSIFICATION/UCM
By SP-1 [Signature]
Date 1/3/93 [Signature]

SUMMARY OF BORINGS NEAR PONDS

Table 1

<u>POND</u>	<u>POND BOTTOM ELEVATION (ft)</u>	<u>BOTTOM OF BORING (ft)</u>	<u>BORING INTERVAL BEYOND BOTTOM OF POND (ft)</u>	<u>BORING ID</u>
A-1	5823	5822	1	13-86
A-2	5799	5791	8	40991
A-3	5776	5762	14	12-86
		5759	17	TH046192
		5750	26	TH046292
		5758	18	TH046392
		5749	27	TH046492
A-4	5731	5697	34	11-86
		5707	24	41091
		5714	17	38-86
B-1	5875	5872	3	36-86
		5853	22	TH046592
		5849	26	TH046692
		5852	23	TH046792
B-2	5860	N/A	-	-
B-3	5846	5830	16	TH046892
		5825	21	TH046992
		5822	24	TH047092
B-4	5833	N/A	-	-
B-5	5773	5779	- 6	37-86

Data for the above table were obtained from: Work Plan for Geotechnical Analysis of Earthen Dams B-1, B-2, A-3 and Landfill Dam, EG&G Rocky Flats, July 29, 1992 and Geologic Characterization Report, Appendix G, EG&G Rocky Flats, September 1992.

3.0 ALLUVIAL MONITORING WELLS

A single alluvial monitoring well will be installed immediately downstream of each dam at ponds A-4 and B-5 as opposed to the two that are specified for each dam in Section 7.2.2 Stage 3 of the Work Plan. Two wells would provide redundant sampling of groundwater.

The two wells would be in the same drainage and would likely be drilled through the same lithology. Groundwater samples would be obtained from the same aquifer in essentially the same area.

A bedrock monitoring well will be nested with the single alluvial well if sandstone is encountered within the first bedrock unit, as required in the Work Plan. The wells will be installed as specified in the Work Plan.

4.0 AMBIENT AIR MONITORING STATIONS

The three proposed ambient air samplers specified in Section 7.2.9 of the Work Plan are deleted. Short term and worker protection air sampling will be performed as indicated in the Plan for Prevention of Contaminant Dispersion (PPCD) and site specific health and safety plans.

Baseline ambient data for this OU will be obtained from the existing plant site Radiological Ambient Air Monitoring Program (RAAMP), which includes samplers in the Walnut Creek drainage and units at downwind locations S-35, S-36, S-37, S-38, and S-39 (Figure 2). In addition to the RFP sampling effort, CDH operates ambient air samplers in the vicinity of this OU and at downwind locations (D-5, D-6, E-2 and E-3, X-1 and X-2). Data from these sources will be used to evaluate the radioactive ambient emissions and perform an air pathway analysis.

5.0 SURFACE WATER SAMPLING ALONG STREAMS

Surface water and sediment sampling stations selected jointly by EG&G, DOE-RFO, CDH, and USEPA in a field reconnaissance meeting will replace those specified or implied in the Work Plan for IHSS142. The sampling stations will be located at positions along the Walnut Creek drainage and at positions immediately downstream from significant tributaries. By

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 BEDROCK MONITORING WELLS	1
3.0 ALLUVIAL MONITORING WELLS	3
4.0 AMBIENT AIR MONITORING STATIONS	3
5.0 SURFACE WATER SAMPLING ALONG STREAMS	3
6.0 RADIATION SURVEY	6
7.0 ALTERNATE RADIATION SURVEY INSTRUMENT	7

List of Figures

1. Pond Boring Locations
2. Air Sampling Stations Map, site wide
3. Surface Water Sampling Locations for Operable Unit Number 6

Appendix

Well Logs

1.0 INTRODUCTION

The Purpose of this Technical Memorandum is to eliminate unnecessary effort presently specified in the Interagency Agreement (IAG) and/or the OU 6 Work Plan. Additionally, surface water sampling along streams and surface water flow measurements at gauging stations are proposed to enhance the Human Health Risk Assessment and contaminant fate and transport modeling which will be provided in the RFI/RI report

2.0 BEDROCK MONITORING WELLS

The five bedrock monitoring wells specified in Section 7.2.2 Stage 3 - Monitoring Wells, OU 6 Work Plan are to be deleted. The alluvium and bedrock in the vicinity of the ponds have been adequately characterized by ten borings and monitoring wells along the A series ponds and by eight borings and monitoring wells along the B series ponds (Figure 1).

Examination of the well logs in the Appendix shows occurrence of discontinuous sand lenses scattered among 7 of the 18 borings and monitoring wells. Of those seven occurrences of sand lenses, monitoring wells intersect five. Sands were logged in borings TH046792 and TH046892 but did not occur in four adjacent borings (two near each location). Each sand lense that has been encountered has several, or all of the following attributes:

- Minimal thickness
- Very fined grained with a high clay content
- Overlain by clay
- Discontinuous

Information in Table 1 show that the 18 existing borings and monitoring wells have penetrated to a sufficient depth below the ponds to provide data for the evaluation of the sediments and bedrock beneath the ponds. Although ponds B-2 and B-4 do not have borings immediately adjacent; three borings near B-1 extend from seven to eleven feet below B-2 and three borings near B-3 extend three to eleven feet below B-4.

sampling major tributaries to Walnut Creek and locations where the tributary water is mixed with the main stream water, contaminant loading through the Walnut Creek drainage will be readily quantified. The surface water quality and discharge data collected at each station will be used to identify stream segments where contaminants potentially are loaded into Walnut Creek.

The selected sampling stations are either presently monitored under existing storm water monitoring programs or were once part of the site-wide monitoring program. The site-wide monitoring program provided data for assessing the nature and extent of contamination in surface water and sediments at the RFP, but fate and transport were not addressed.

The approach to the entire OU6 surface-water and sediment investigation is to quantify physical and chemical processes by which potential contaminants are transported through the Walnut Creek watershed. The results of this mechanistic study will provide a data set and corresponding interpretation for risk assessment.

To adequately characterize the Walnut Creek Drainage, surface water samples will be obtained concurrently with sediment samples from the streams and at gauging stations shown on Figure 3. Contemporaneous flow measurements, and aquatic toxicity samples will also be obtained.

One sediment sampling event and two water sampling events will take place. One of the water sampling events will be during base flow conditions in the areas where flowing water can be measured and sampled. The second water sampling event will take place during a storm event or substantial snow melt of sufficient magnitude to provide measurable runoff. The sediment sampling event will be performed during the base flow conditions.

Surface water and sediment sampling will be performed according to EMD Operational Procedures Manual No. 5-21000-OPS-SW Volume IV: Surface Water. The sampling locations and the data to be acquired are summarized in Table 2.

Walnut Creek Characterization
Data Acquisition
Table 2

<u>Station ID</u>	<u>Flow Measurement</u>	<u>Water Chemistry</u>	<u>Sediment Chemistry</u>	<u>Aquatic Toxicity</u>
SW116	SB	SB	B	B
SW118	SB	SB	B	B
SW093	SB	SB	B	B
GS13	SB	SB	B	B
SW091B	SB	SB	B	B
GS12	SB	SB	B	B
GS11	SB	SB	B	B
GS03	SB	SB	B	B
GS09	SB	SB	B	B
GS10	SB	SB	B	B
SW103	B	B	B	B
SW022	SB	SB	B	B
# 1	SB	SB	B	B
# 2	SB	SB	B	B
# 3	SB	SB	B	B

S = Storm event or pond discharge event sampling.

B = Base flow sampling if sufficient water exists.

The water toxicity samples will be collected during base flow conditions to avoid the concentrations of dissolved minerals, elements and deposited air borne urban pollutants associated with storm water runoff.

The water and sediment samples will be analyzed according to Table 7-11 of the Work Plan following the EG&G General Radiochemistry and Routine Analytical Services Protocol (GRAASP). In order to augment the toxicity data, water samples will also be analyzed for the following parameters according to GRAASP:

Dissolved Organic Carbon
Alkalinity
Sulfate

Chloride
Bicarbonate
Silicon

Toxicity Screens will be performed according to Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms, USEPA 600/4-85/013, March 1985 and Requirements for Whole Effluent Toxicity Testing, EG&G Rocky Flats, EMD, September 1992.

6.0 RADIATION SURVEY

The OU 6 Work Plan requires that a radiation survey be performed over IHSS 165, the Triangle Area (Figure 7-1 of the Work Plan). The radiation survey will be limited to the eastern most portion of the IHSS which is located east of the PSZ fence where the soil is not covered with gravel.

The remainder of IHSS 165 is covered with gravel. The gravel has been compacted and there are no noticeable voids within the covered area. Compacted gravel of minimal thickness forms an effective barrier to gamma radiation. Therefore, a radiation survey over the gravel covered area would be futile and costly.

IHSS 165 has had radionuclide contaminated soil excavated and removed from the area. The last known excavation of contaminated soil in IHSS 165 occurred during 1973 and perhaps 1974. A radiation survey (FIDLER) performed in April 1975 indicated no hot spots and no contaminated soil (Historical Release Report, June 1992).

The gravel was placed sometime after 1978. A FIDLER survey on a 100 foot grid, performed over the gravel for the purpose of clearing the soil gas survey probe locations, was performed during October 1992. The survey showed no radioactivity above background. Because of the contaminated soil removal (and implied placement of uncontaminated fill), the gravel covering, and the negative results of the radiation surveys, it is doubtful that an additional radiation survey would provide evidence of surficial radiation.

The potential for radiation contamination beneath the gravel, and outside

of the excavated areas will be addressed by sampling from four random soil cores and nine soil borings as specified in the Work Plan. Although the nine soil borings will be located based upon the results of the soil gas survey; the contaminants were mixed waste and likely followed similar paths.

The Work Plan specifies that six to fifteen surface soil samples be collected. To supplant the lack of a radiation survey, fifteen samples will be collected at random grid nodes of a 70 foot grid over the portions of the IHSS that are outside of the Protected Security Zone (PSZ). The 70 foot grid cell size is estimated to provide approximately 50 grid nodes on which the fifteen soil sample locations will be randomly distributed. The soil samples will be obtained from native soil beneath the gravel and/or identifiable fill material. The samples will be collected according to SOP GT.08 and analyzed as specified in Table 7-11 of the Work Plan.

7.0 ALTERNATE RADIATION SURVEY INSTRUMENT

Presently the Work Plan specifies that an HPGe instrument be used for all the radiation surveys. The HPGe is a replacement for the FIDLER instrument originally specified. Although the HPGe is the preferred instrument it may be necessary to substitute the FIDLER instrument to avoid delays. In the event that the FIDLER instrument be used the grid spacing will be reduced to 25 feet. Either instrument will provide the Level 2 EPA data quality objectives.

APPENDIX

Boring and Monitoring Well Logs

STATE PLANE COORDINATE:

NORTH: 75323

EAST: 2090035

REMARKS: Hollow Stem Auger.

TOTAL DEPTH (FT): 15

AREA: BUFFER EAST

LOCATOR NUMBER: R13

GROUND ELEVATION (FT): 5712.19

CASING DIAMETER (IN): 2 ID

BOREHOLE DIAMETER (IN): 7.5

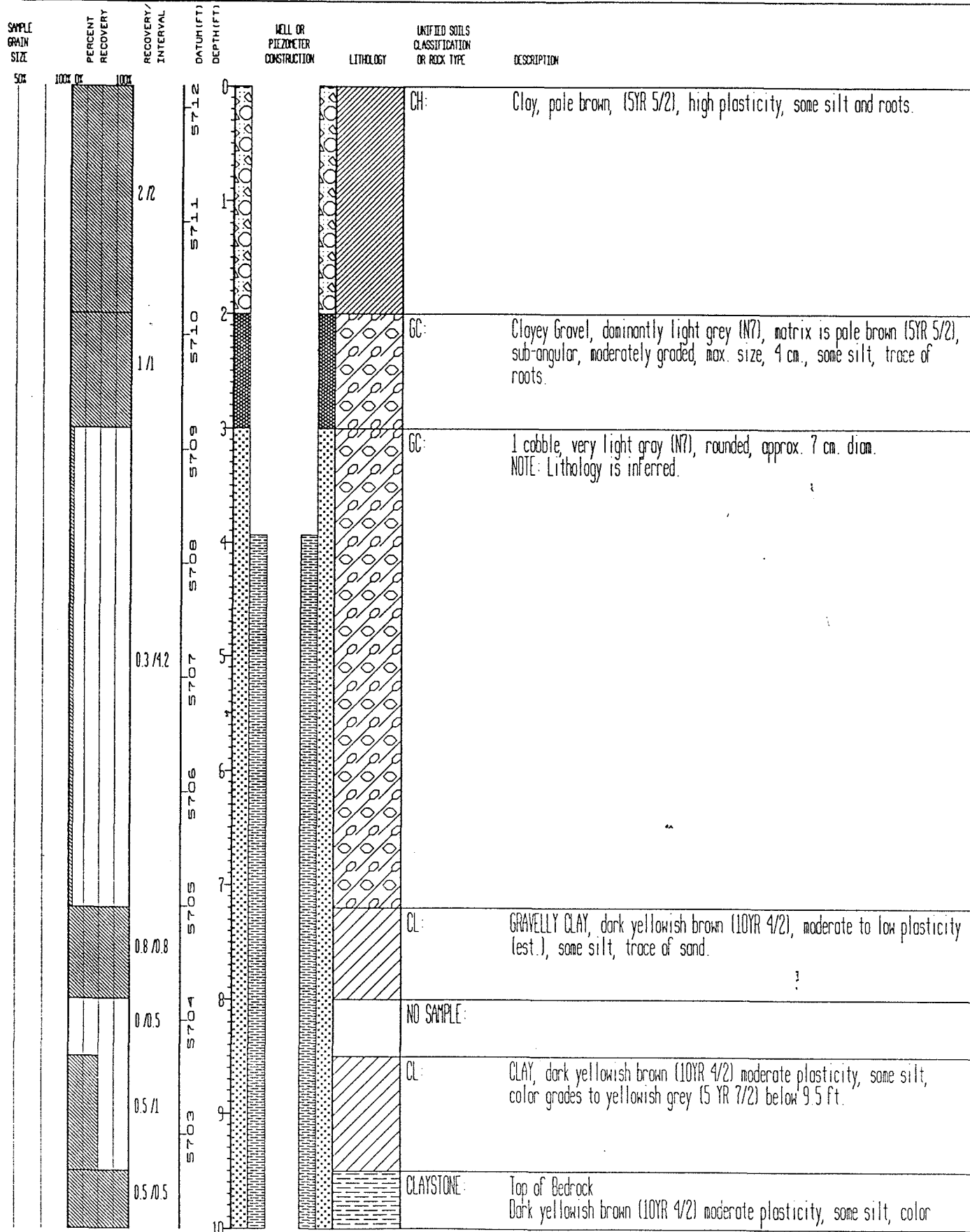
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GEOLOGIST: DCB

DATE DRILLED: 9/05/86

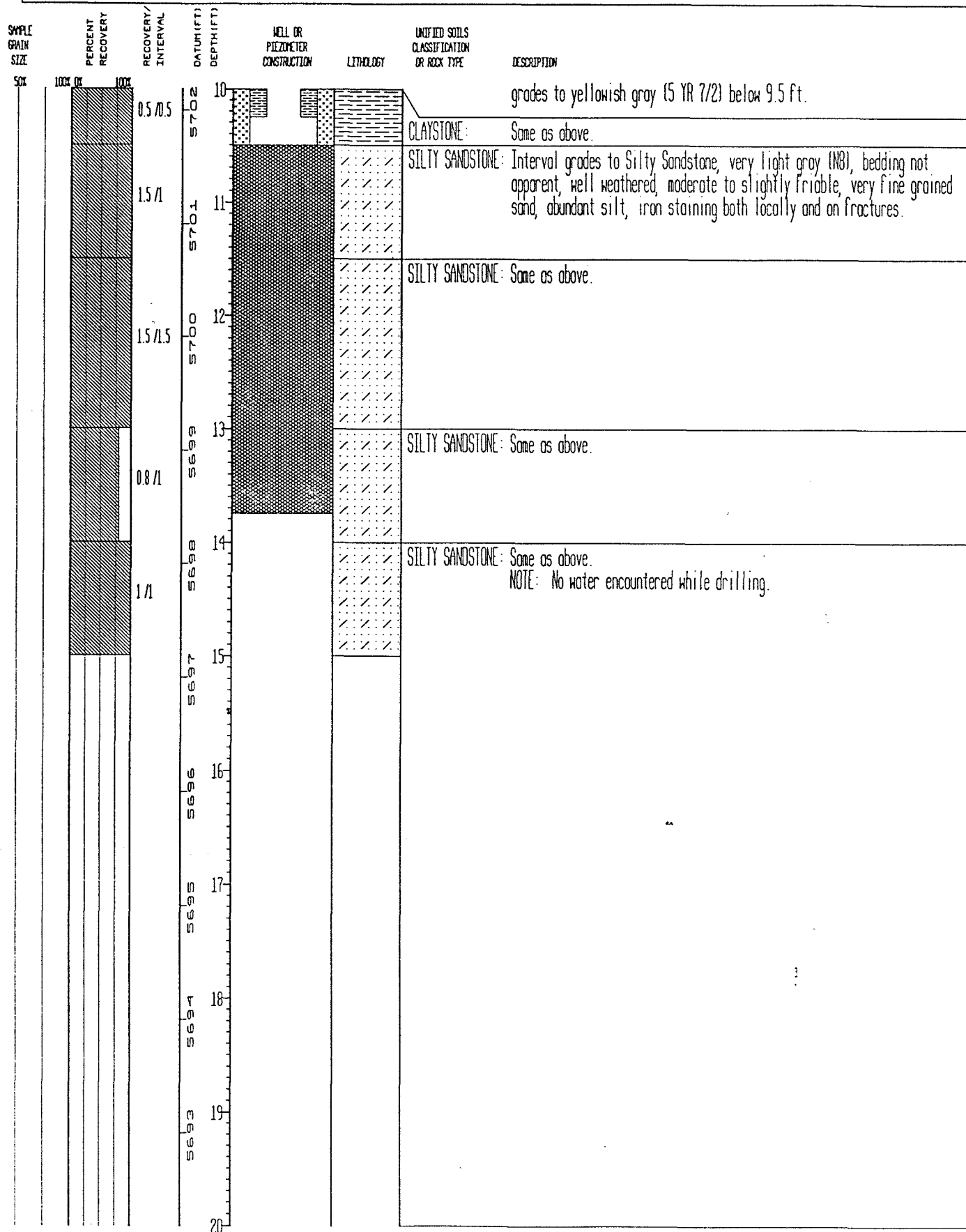
LOG OF BORING NUMBER:

11-86

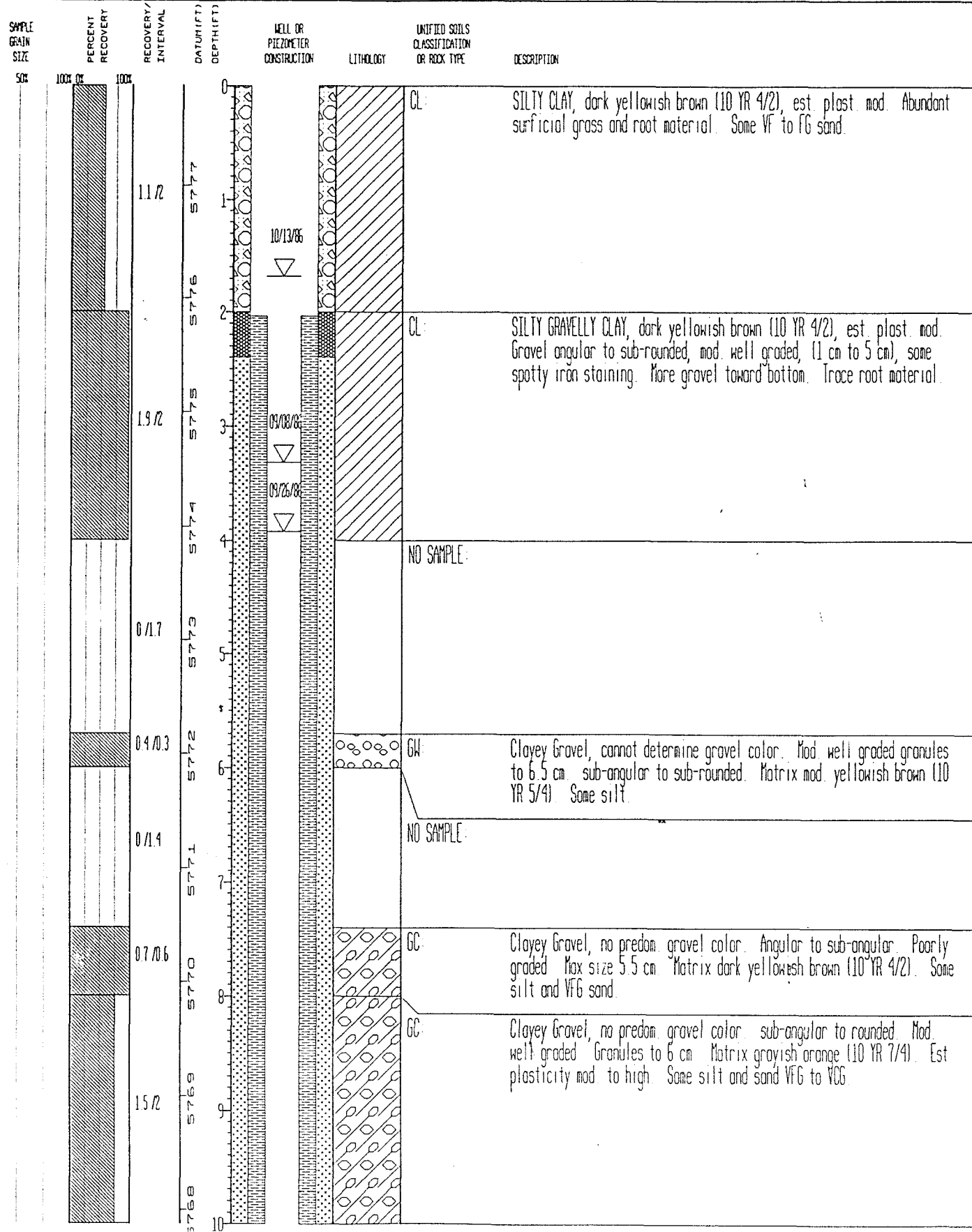


STATE PLANE COORDINATE: TOTAL DEPTH (FT): 15 GROUND ELEVATION (FT): 5712.19 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER:
 NORTH: 753323 AREA BUFFER EAST CASING DIAMETER (IN): 2 ID GEOLOGIST: DCB
 EAST: 2090035 LOCATOR NUMBER: RL3 BOREHOLE DIAMETER (IN): 7.5 DATE DRILLED: 9/05/86
 REMARKS: Hollow Stem Auger.

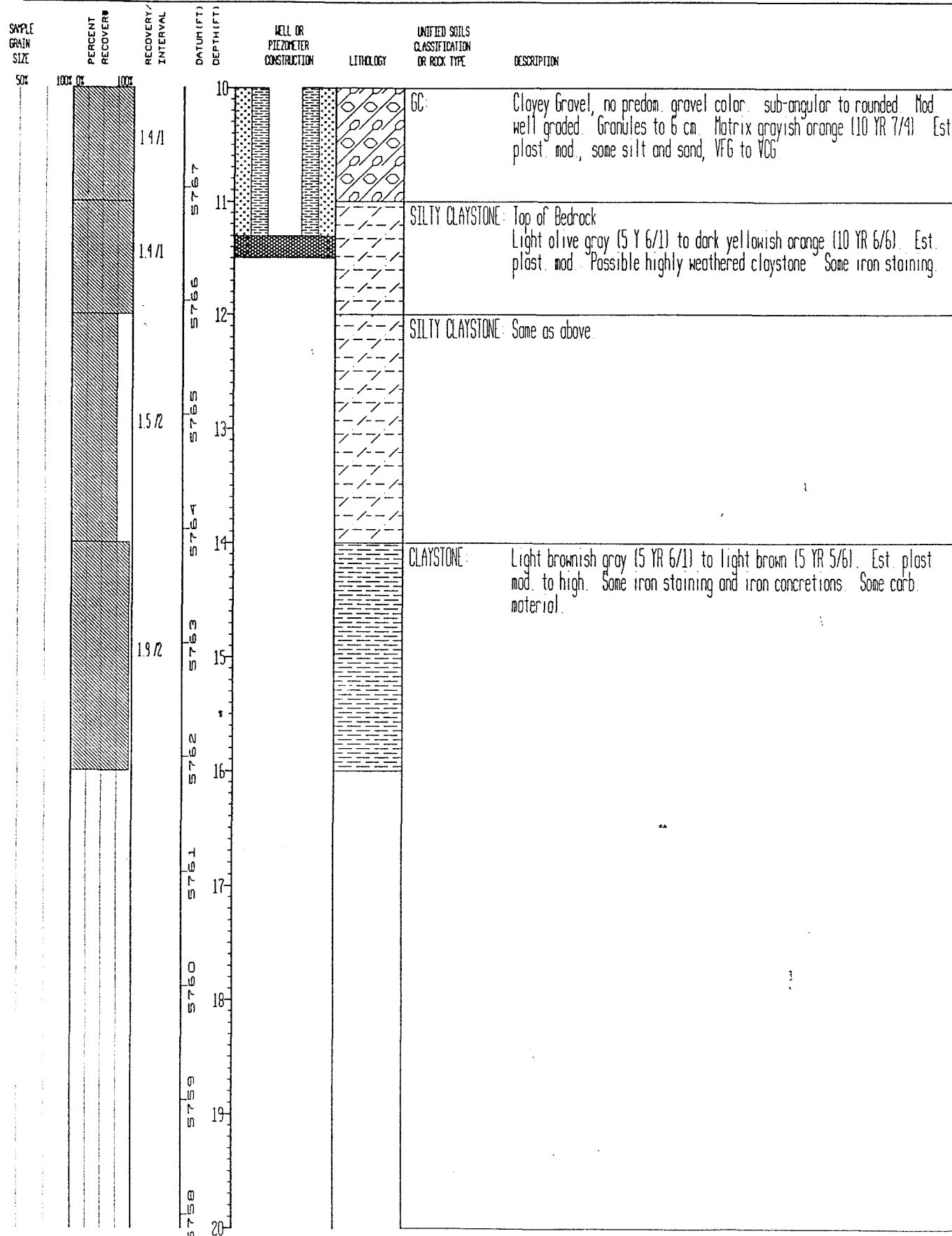
11-86



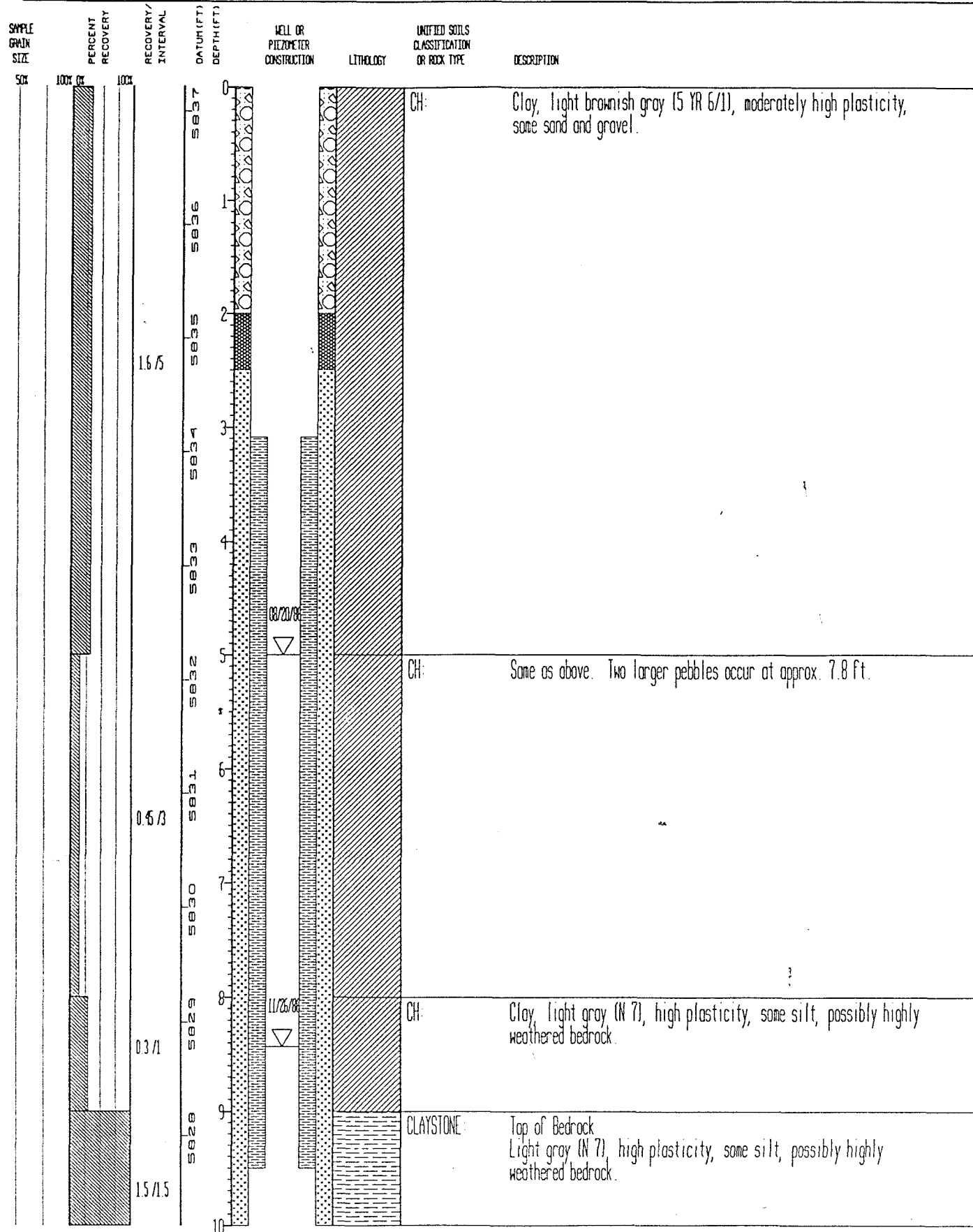
STATE PLANE COORDINATE: NORTH: 752345 EAST: 2087894
 TOTAL DEPTH (FT): 16 AREA: BUFFER EAST LOCATOR NUMBER: 012
 GROUND ELEVATION (FT): 5777.89 CASING DIAMETER (IN): 2 ID BOREHOLE DIAMETER (IN): 7 1/4
 PROJECT NUMBER: 667 L1 GEOLOGIST: LAA DATE DRILLED: 09/06/86
 LOG OF BORING NUMBER: 12-86
 REMARKS: Hollow Stem Auger



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 16	GROUND ELEVATION (FT) 5777.88	PROJECT NUMBER 657.11	LOG OF BORING NUMBER
NORTH: 752345	AREA: BUTTER EAST	CASING DIAMETER (IN) 2 ID	GEOLOGIST: LAA	12-86
EAST: 2087894	LOCATOR NUMBER: 012	BOREHOLE DIAMETER (IN) 7 1/4	DATE DRILLED: 09/06/86	
REMARKS: Hollow Stem Auger				

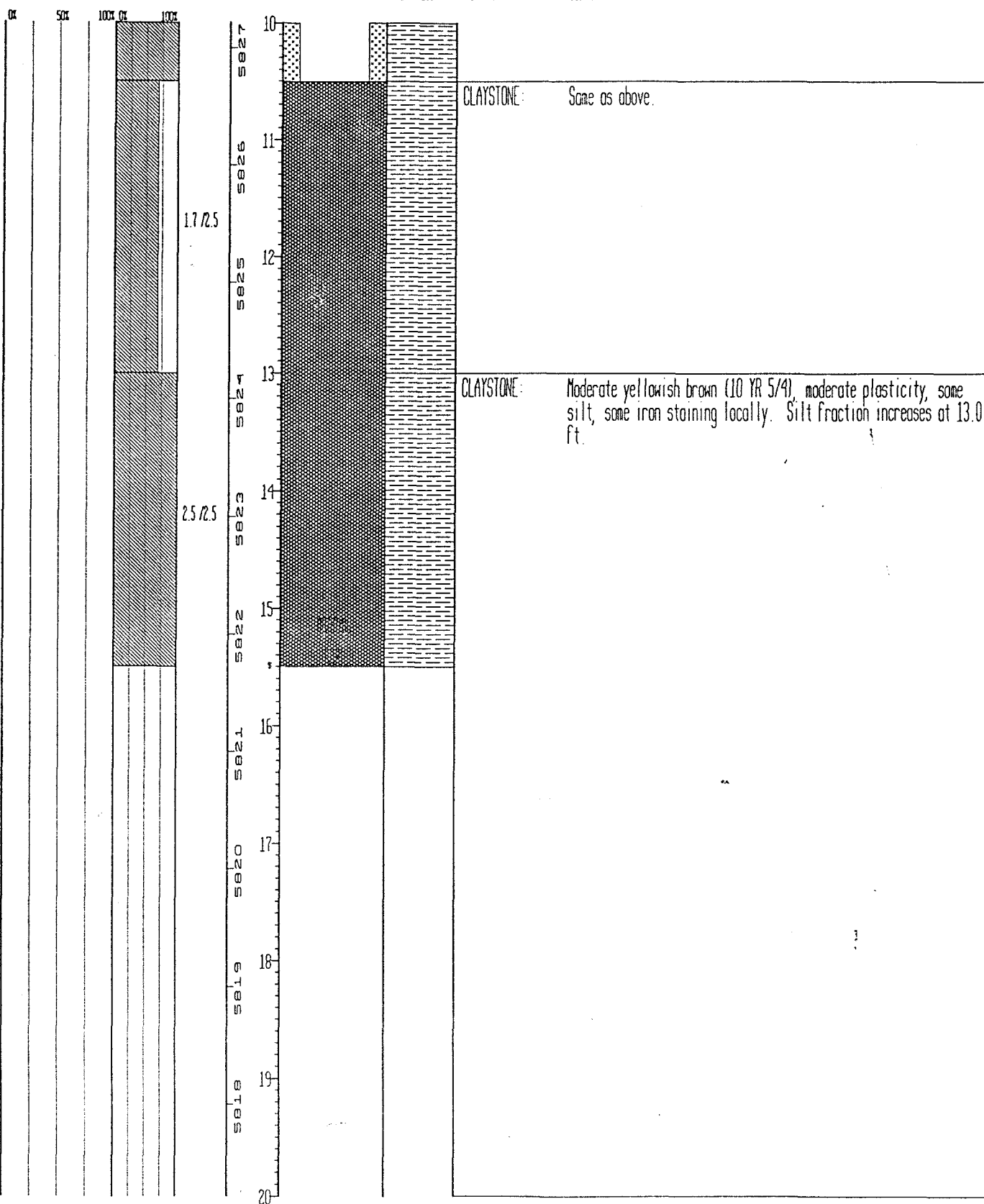


STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 15.5	GROUND ELEVATION (FT): 5837.22	PROJECT NUMBER: 667.11	LOG OF BORING NUMBER:
NORTH: 751869	AREA: SOLAR POND	CASING DIAMETER (IN): 2 ID	GEOLOGIST: DCB	13-86
EAST: 2086055	LOCATOR NUMBER: N11	BOREHOLE DIAMETER (IN): 7 1/4	DATE DRILLED: 08/20/86	
REMARKS: Hollow Stem Auger.				

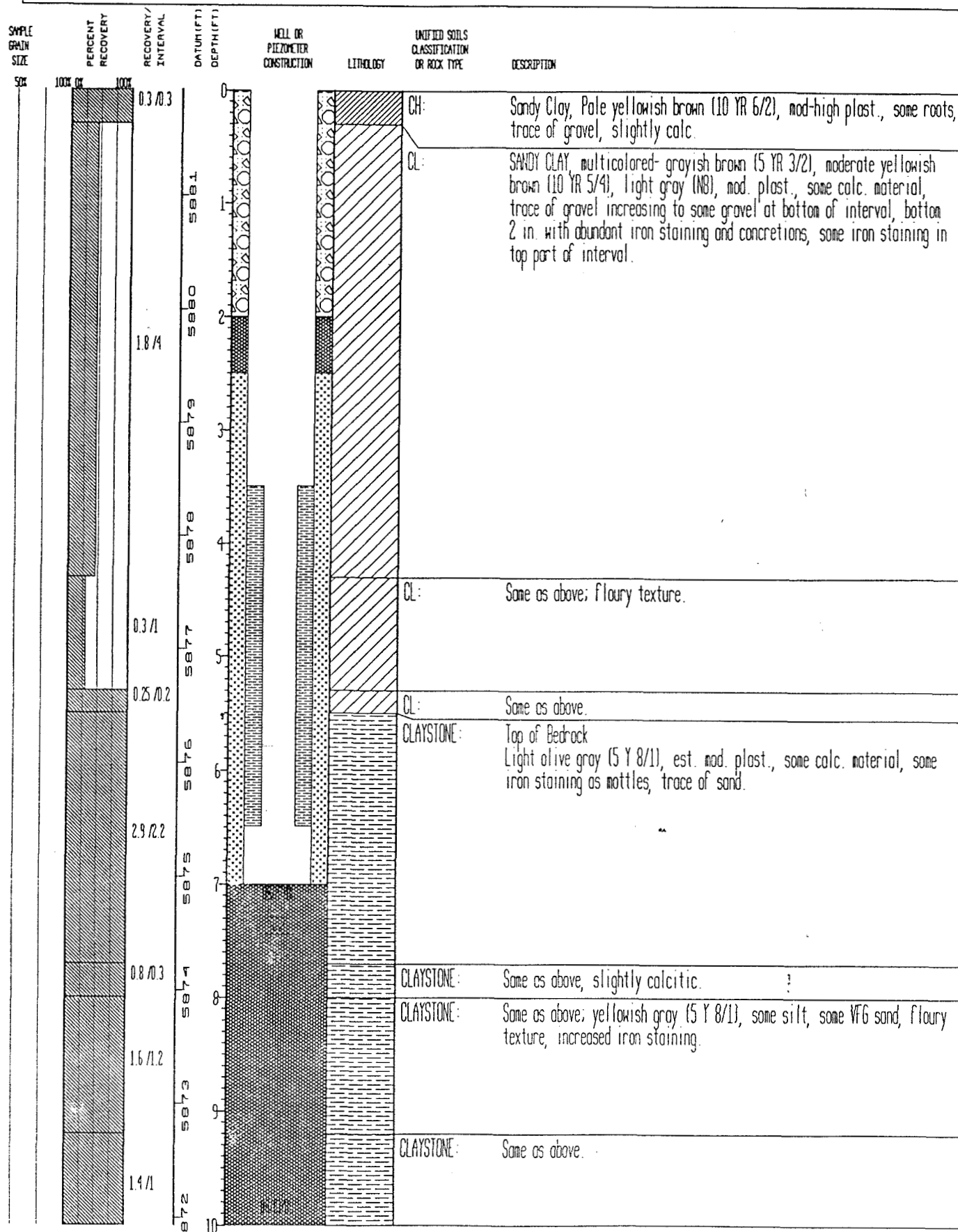


STATE PLANE COORDINATE: TOTAL DEPTH (FT): 15.5 GROUND ELEVATION (FT): 5837.22 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER: 13-86
 NORTH: 751869 AREA: SOLAR POND CASING DIAMETER (IN): 2.10 GEOLOGIST: DCB
 EAST: 2086055 LOCATOR NUMBER: N11 BOREHOLE DIAMETER (IN): 7 1/4 DATE DRILLED: 08/20/86
 REMARKS: Hollow Stem Auger.

SAMPLE GRAIN SIZE PERCENT RECOVERY RECOVERY INTERVAL DATUM (FT) DEPTH (FT) WELL OR PIEZOMETER CONSTRUCTION LITHOLOGY UNIFIED SOILS CLASSIFICATION OR ROCK TYPE DESCRIPTION



STATE PLANE COORDINATE: TOTAL DEPTH (FT): 10.2 GROUND ELEVATION (FT): 5881.94 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER: 36-86
 NORTH: 750397 AREA: EAST TRENCHES CASING DIAMETER (IN): 2.10 GEOLOGIST: DAT
 EAST: 2086819 LOCATOR NUMBER: N10 BOREHOLE DIAMETER (IN): 7.25 DATE DRILLED: 08/25/86
 REMARKS: Hollow Stem Auger.



STATE PLANE COORDINATE:

NORTH: 751563

EAST: 208862

REMARKS: Hollow Stem Auger.

TOTAL DEPTH (FT): 13

AREA BUFFER EAST

LOCATOR NUMBER: P11

GROUND ELEVATION (FT): 5792.02

CASING DIAMETER (IN): 2 ID

BOREHOLE DIAMETER (IN): 7.5

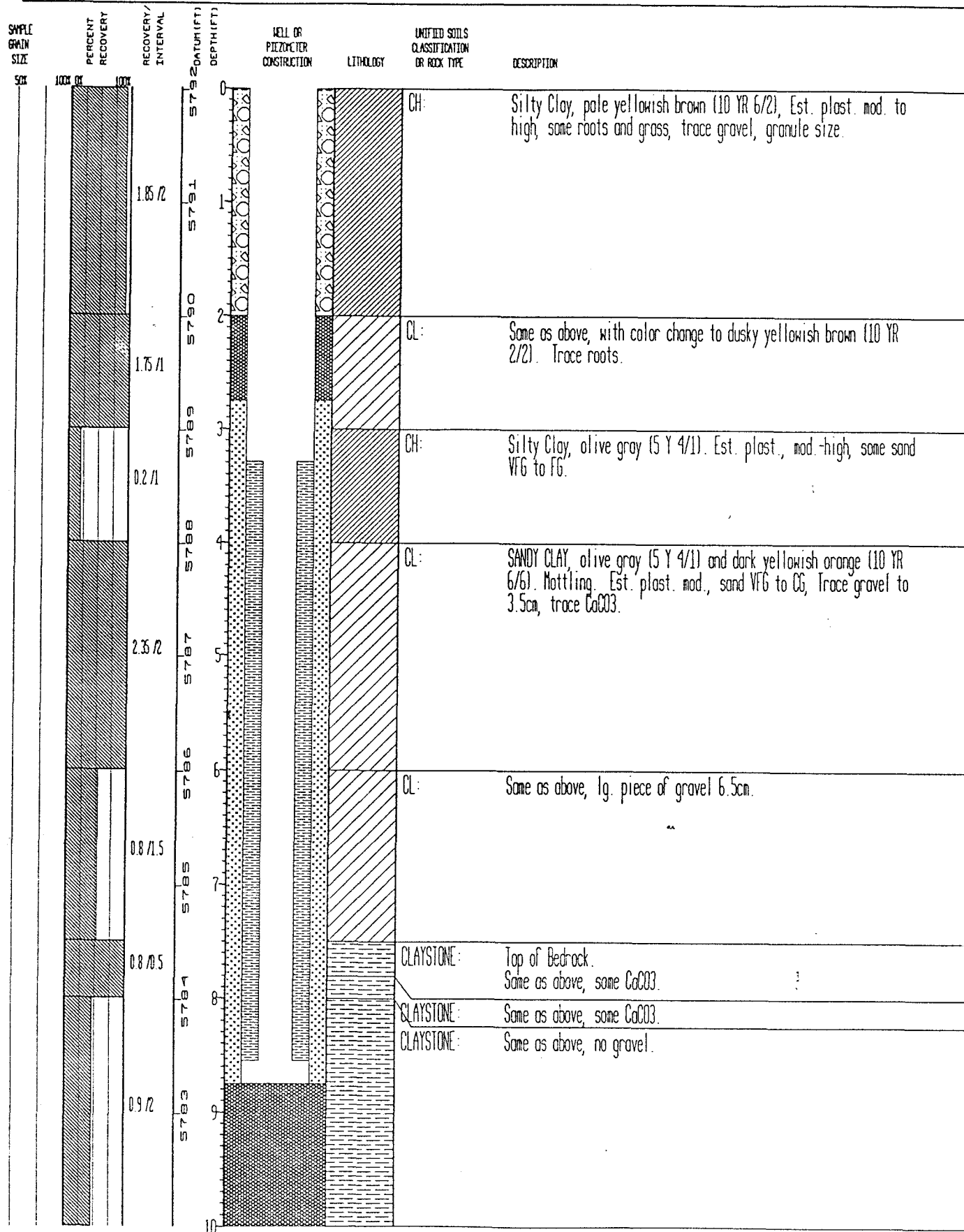
PROJECT NUMBER: 667.11

GEOLOGIST: LAA

DATE DRILLED: 09/22/86

LOG OF BORING NUMBER:

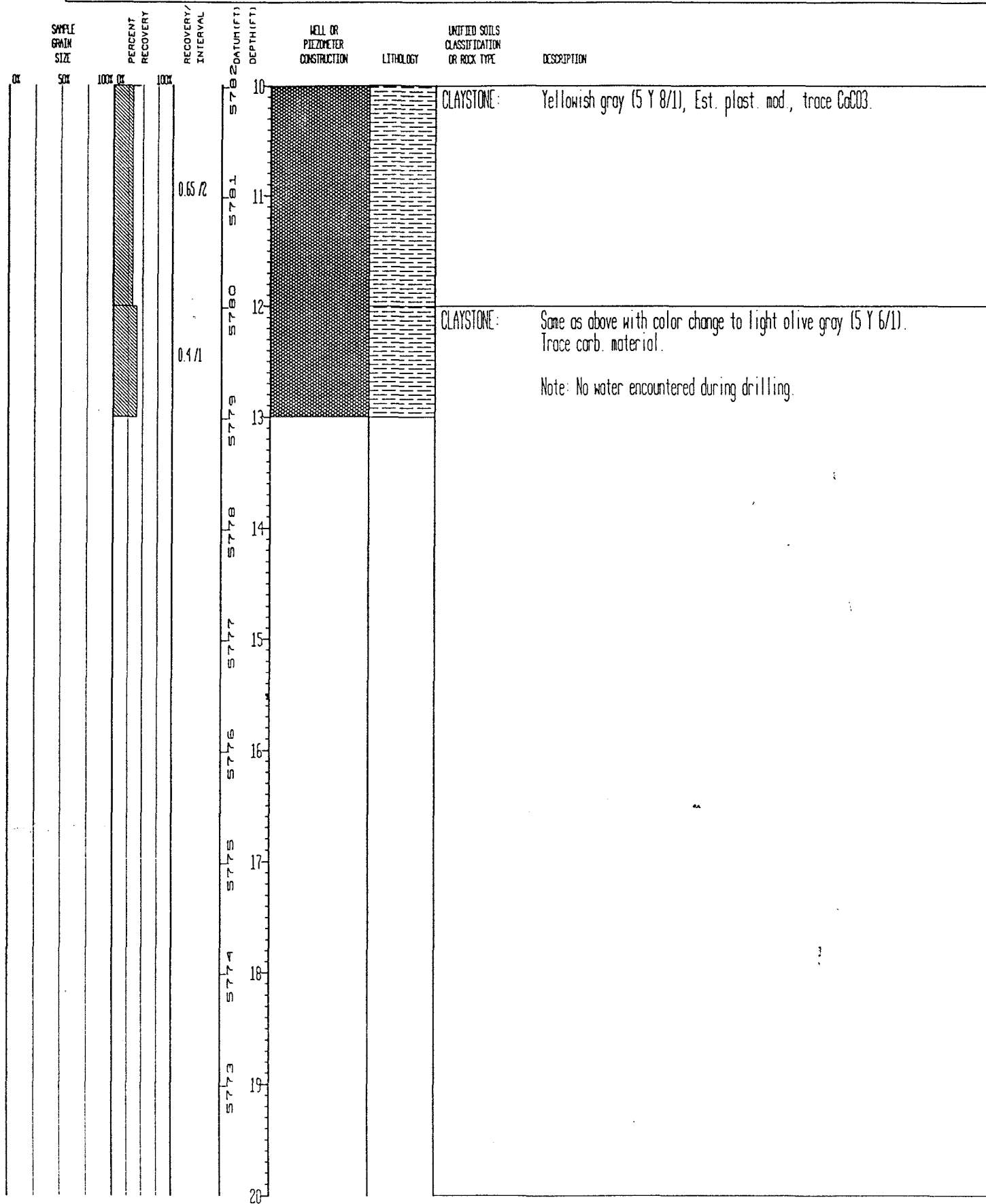
37-86



STATE PLANE COORDINATE: TOTAL DEPTH (FT): 13 GROUND ELEVATION (FT): 5792.02 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER: 37-86
 NORTH: 751563 AREA: BUFFER EAST CASING DIAMETER (IN): 2.10 GEOLOGIST: LAA
 EAST: 2088862 LOCATOR NUMBER: P11 BOREHOLE DIAMETER (IN): 7.5 DATE DRILLED: 09/22/86
 REMARKS: Hollow Stem Auger.

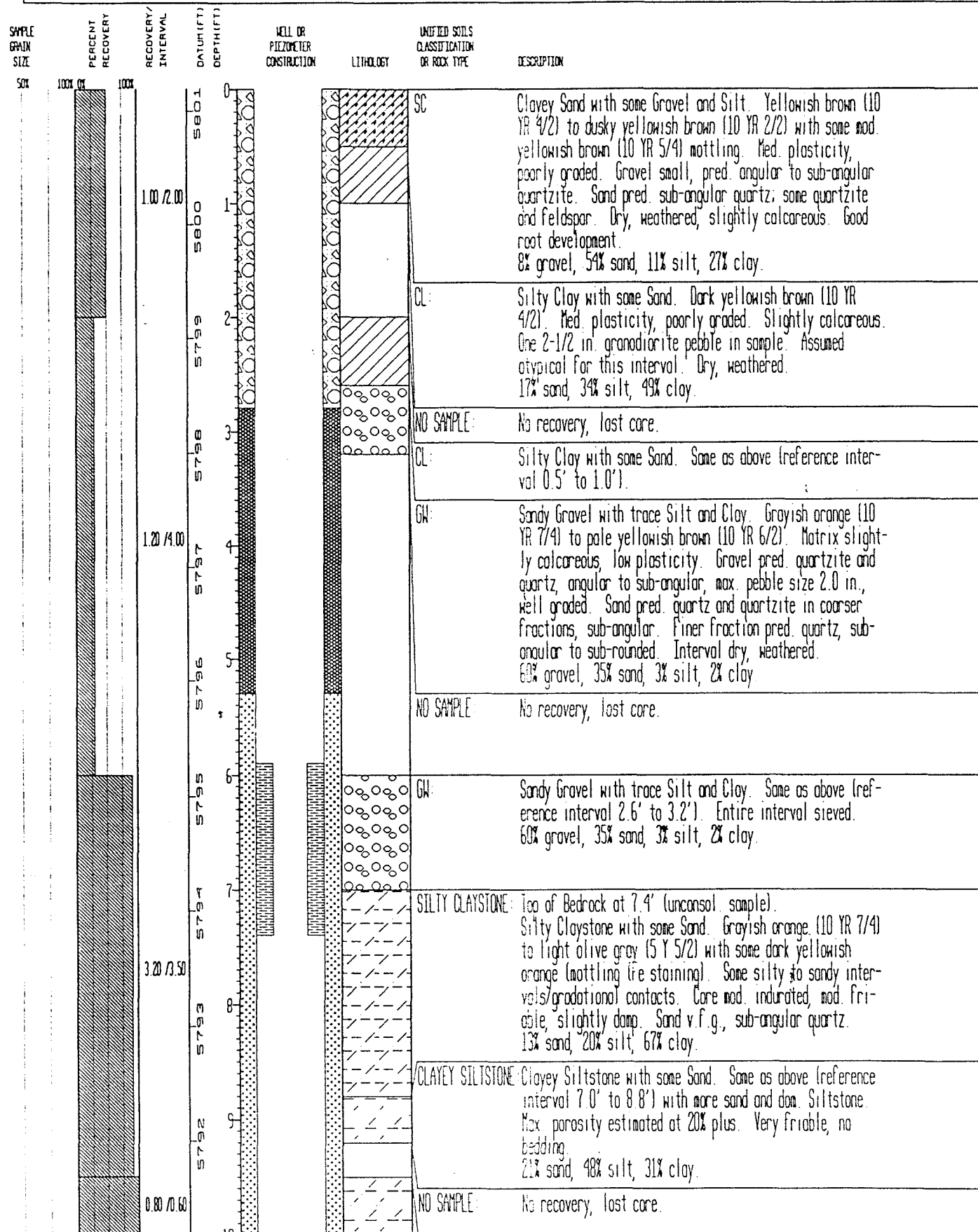
CHIEF OF SAMPLE DEPT. OF

SAMPLE NUMBER



STATE PLANE COORDINATE: TOTAL DEPTH (FT) 10.1 GROUND ELEVATION (FT) 5301.19 PROJECT NUMBER: SITEWIDE LOG OF BORING NUMBER:
 NORTH: 752163 AREA: SITEWIDE CASING DIAMETER (IN) 2.0 I.D. GEOLOGIST: 6. GRIGSBY
 EAST: 2086298 LOCATOR NUMBER: 012 BOREHOLE DIAMETER (IN) 7.25 DATE DRILLED: 11/11/91
 REMARKS: Hollow Stem Auger, Rotary Core. ASI Geologist, F. Grigsby; EBASCO Geologist, R.T. Canon.

40991



STATE PLANE COORDINATE	TOTAL DEPTH (FT) 10.1	GROUND ELEVATION (FT) 5801.19	PROJECT NUMBER	SITEWIDE	LOG OF BORING NUMBER
NORTH 752163	AREA SITEWIDE	CASING DIAMETER (IN) 2.0 I.D.	GEOLOGIST	6 GRIGSBY	40991
EAST 2086298	LOCATOR NUMBER 012	BOREHOLE DIAMETER (IN) 7.25	DATE DRILLED	11/11/91	

REMARKS Hollow Stem Auger, Rotary Core. ASI Geologist, F Grigsby, EBASCO Geologist, R T Canon

SAMPLE GAIN SIZE	PERCENT RECOVERY	RECOVERY/ INTERVAL	DATUM (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNIFIED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
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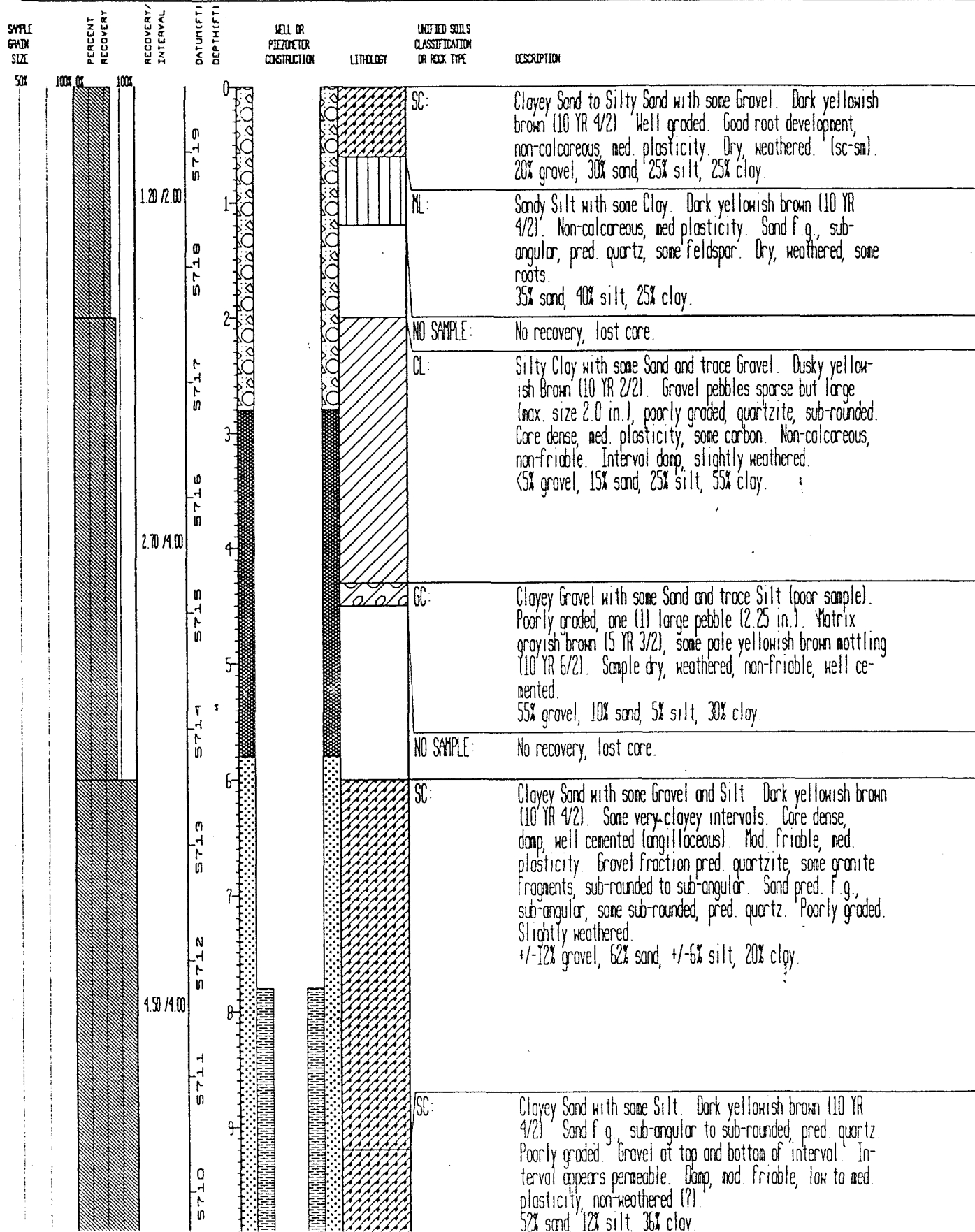
CLAYEY SILTSTONE Clayey Siltstone with some Sand. Same as above (reference interval 8.8' to 9.2')
 21% sand, 48% silt, 31% clay
 NOTE: 0.2' extra core recovery.

Total Drilled Depth = 10.1'
 NOTE: Total Depth of Casing = 9.73'
 Bottom Depth of Filter Pack = 10.1'
 Top of 16-40 sand Backfill = 10.1'

5791 10
5790 11
5789 12
5788 13
5787 14
5786 15
5785 16
5784 17
5783 18
5782 19
20

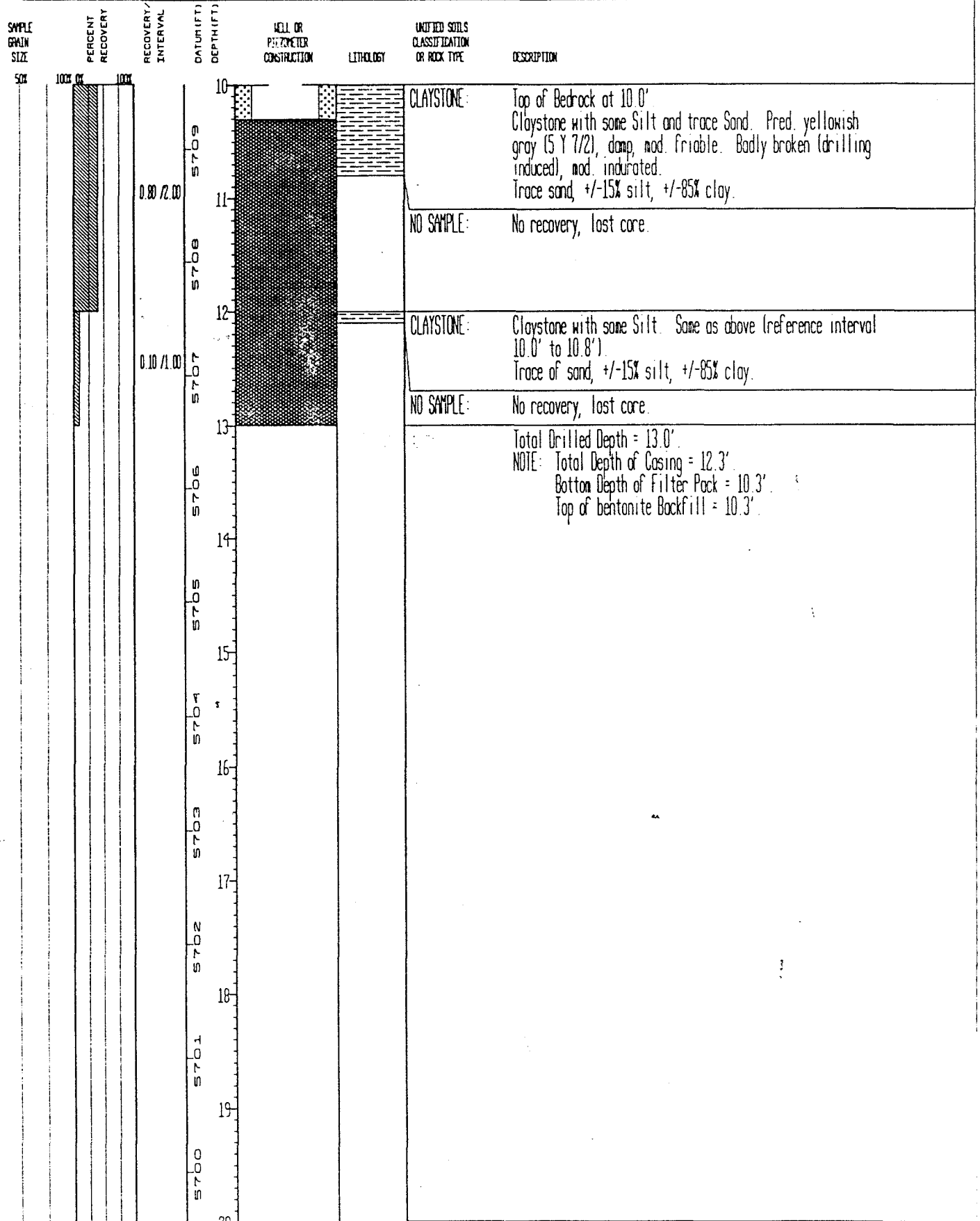
STATE PLANE COORDINATE: TOTAL DEPTH (FT): 13.0 GROUND ELEVATION (FT): 5719.56 PROJECT NUMBER: SITE/IDE: LOG OF BORING NUMBER:
 NORTH: 753241 AREA: SITE/IDE CASING DIAMETER (IN): 2.0 GEOLOGIST: F.G.
 EAST: 2089994 LOCATOR NUMBER: 013 BOREHOLE DIAMETER (IN): 7.25 DATE DRILLED: 11/11/91
 REMARKS: Hollow Stem Auger and Rotary Core Drill. ASI Geologist Fred Grigsby; EBASCO Geologist, R.T. Canon. ASI Log.

41091

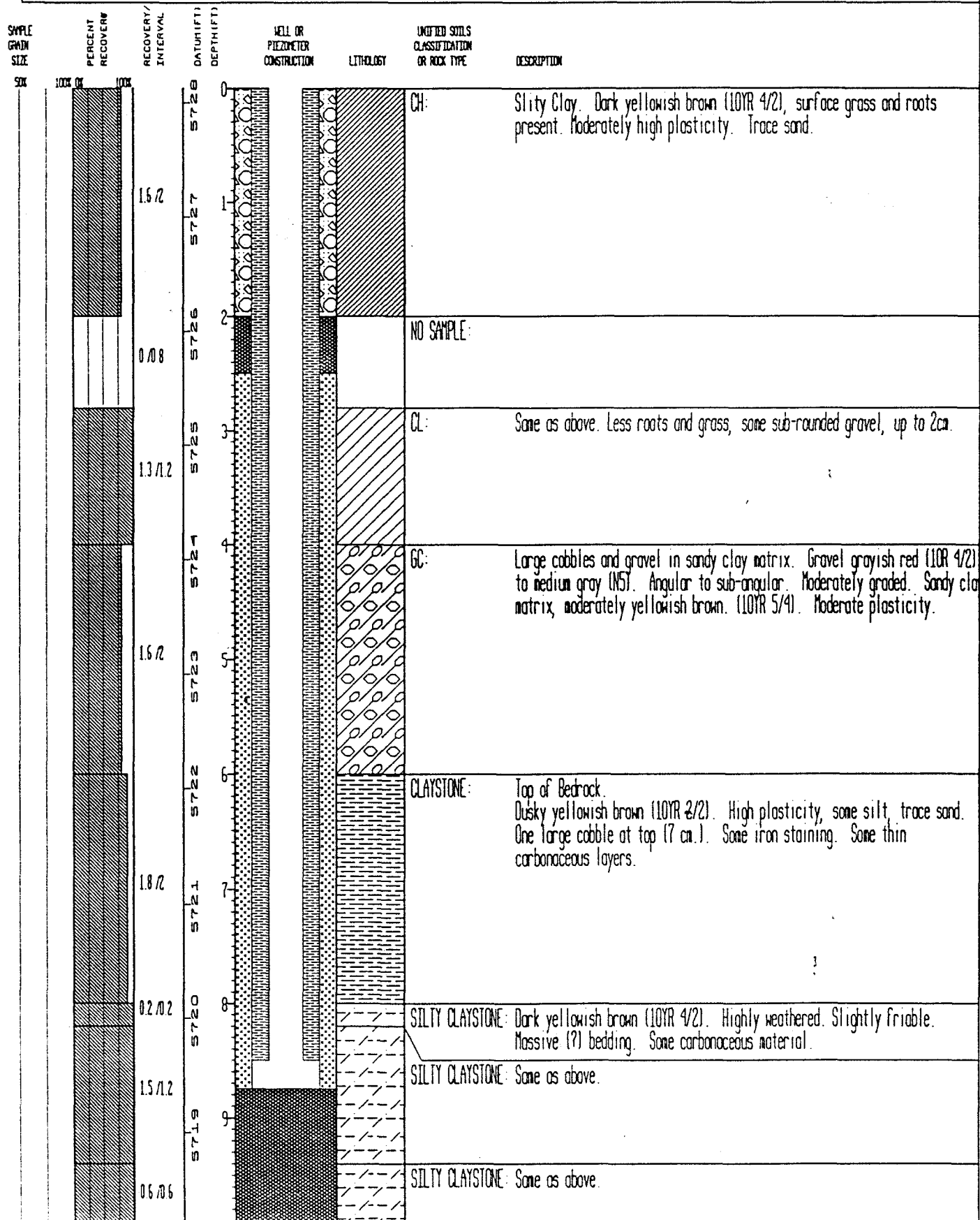


STATE PLANE COORDINATE:	TOTAL DEPTH (FT): 13.0	GROUND ELEVATION (FT): 5719.55	PROJECT NUMBER	SITELINE	LOG OF BORING NUMBER
NORTH: 753241	AREA: SITEWIDE	CASING DIAMETER (IN): 2.0	GEOLOGIST:	F.G.	41091
EAST: 2089994	LOCATOR NUMBER: 013	BOREHOLE DIAMETER (IN): 7.25	DATE DRILLED:	11/11/91	

REMARKS: Hollow Stem Auger and Rotary Core Drill. ASI Geologist Fred Grigsby; EBASCO Geologist, R.T. Canon. ASI Log.



STATE PLANE COORDINATE: TOTAL DEPTH (FT): 14 GROUND ELEVATION (FT): 5728.13 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER: 38-86
 NORTH: 752826 AREA: BUFFER EAST CASING DIAMETER (IN): 2 ID GEOLOGIST: LAA
 EAST: 2090281 LOCATOR NUMBER: R12 BOREHOLE DIAMETER (IN): 7.25 DATE DRILLED: 09/08/86
 REMARKS: Hollow Stem Auger. Core from TD to 13.0'.



STATE PLANE COORDINATE: TOTAL DEPTH (FT): 14 GROUND ELEVATION (FT): 5728.13 PROJECT NUMBER: 667.11 LOG OF BORING NUMBER:
 NORTH: 752826 AREA BUFFER EAST CASING DIAMETER (IN): 2 ID GEOLOGIST: LAA
 EAST: 2090281 LOCATOR NUMBER: R12 BOREHOLE DIAMETER (IN): 7.25 DATE DRILLED: 09/08/86
 REMARKS: Hollow Stem Auger. Core from TD to 13.0'. 38-86

SAMPLE NUMBER	SAMPLE GRAIN SIZE	PERCENT RECOVERY	RECOVERY INTERVAL	DATUM DEPTH (FT)	DEPTH (FT)	WELL OR PIEZOMETER CONSTRUCTION	LITHOLOGY	UNITED SOILS CLASSIFICATION OR ROCK TYPE	DESCRIPTION
	50%	100%		5718	10				CLAYEY SILTSTONE: Dark yellowish brown (10YR 4/2). Highly weathered. Slightly friable. Massive bedding (?), some carbonaceous material. Some iron stains.
			0.7 / 1.3	5717	11				CLAYEY SILTSTONE: Same as above.
			0.9 / 0.7	5716	12				CLAYEY SILTSTONE: Same as above, moderately friable.
			0.65 / 0.65	5715	13				CLAYEY SILTSTONE: Same as above.
			0.5 / 0.35	5714	14				CLAYEY SILTSTONE: Same as above, slightly friable. NOTE: No water encountered while drilling.
			0.9 / 1	5713	15				
				5712	16				
				5711	17				
				5710	18				
				5709	19				
					20				

A-3 N BOREHOLE LOG

BOREHOLE NO.: TH046192 PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 1

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 24.5' DEPTH TO WATER TABLE (FT): 24.1' DATE: 10/2/92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL	SOIL DESCRIPTION
FROM	TO	SYMBOL	
①	5	FILL	GRAVEL, ANGULAR TO SUBROUND, FINE TO COARSE, SANDY, ANGULAR, FINE TO COARSE, SILTY, MED PLASTICITY, MOIST, BROWN
5	8 15	FILL	CLAY, MEDIUM TO HIGH PLASTICITY, STIFF TO VERY STIFF, SANDY, FINE TO COARSE, ANGULAR, GRAVELLY, FINE TO MEDIUM, ANGULAR TO SUBROUND, MOIST, BROWN
8	24	FILL	CLAY, MEDIUM TO HIGH PLASTICITY, STIFF TO VERY STIFF, SANDY, FINE, SUBANGULAR, DECREASING TO TRACE @ 20', MOIST, BROWN
24	36	CS	CLAYSTONE, MEDIUM HARD TO VERY HARD, SLIGHTLY MOIST, DK GREY
			TD @ 36.0'

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (-#200)	BEDROCK			COLOR	HARDNESS					CONDITION							RECOVERY (FT)	
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD	STIFF	VERY HARD	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED	CALCAREOUS		OTHERS
①-3	1	BAG	FILL	X				10	3	3	3	80	10				Brown														1
4.7	24/25	CAL	FILL																												①
6-7	-	BAG	FILL	X				30	6	10	10	5	75				Brown														1
8.4	8/9	CAL	FILL	X				10	10				90				Brown GREY			X											.3
10-13	-	ST	FILL																												①
14.2	12/13	CAL	FILL																												①
13.5-15.0	-	BAG	FILL	X				10	5	5			90				Brown														1
16.8	9/12	CAL	FILL	X													Brown GREY			X									DK GREY		.2
17-20	-	BAG	FILL	X					5				95				Brown														1
21.0	15/15	CAL	FILL	X													Brown				X										3
24.6	11/21	CAL	FILL/CS	X									100		X		Dark Blue GREY			X											.3
28.6	22/30	CAL											100		X					X											.3
35.7	35/50	CAL											100		X						X										.3

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4033-210342) (W-C Log Form) (7/4/92 10:39 AM)

6 1/4"

A-3 ~~2~~ BOREHOLE LOG

BOREHOLE NO.: TH046292 Middle PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 2

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): NE DEPTH TO WATER TABLE (FT): NE DATE: 10/12/92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL	SOIL DESCRIPTION
FROM	TO	SYMBOL	
0	3	FILL	(GC-CL) GRAVELLY CLAY/CLAYEY GRAVEL 40%-60% CLAY, 40-60% GRAVEL HIGH PLASTICITY CLAY ANGULAR, MEDIUM GRAVEL DRY TO MOIST, BROWN
3	15	FILL	CLAY, MEDIUM STIFF TO STIFF, HIGH PLASTICITY, MOIST, BROWN/GREY GRAVELLY @ 5.0 MEDIUM, SUBTEND TO SUBANG. DECREASING TO 0% @ 6'
15	29.2	FILL	CLAY, HIGH PLASTICITY, VERY STIFF, MOIST, BROWN GREY FERTAINING THROUGHOUT, TRACE CaCO ₃ NODULES, TRACE CARBONACEOUS STAINING @ 21'
LVS			

CLASSIFICATION OF INDIVIDUAL SAMPLES

CLASSIFICATION OF INDIVIDUAL SAMPLES																														
TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE					% SAND	GRADING				% FINES (-#200)	BEDROCK			COLOR	HARDNESS					CONDITION						RECOVERY (FT)
				DRY	MOIST	VERY MOIST	WET	FINE		MEDIUM	COARSE	GRAVEL	SANDSTONE		SILTSTONE	CLAYSTONE	VERY SOFT		SOFT	FIRM/MED. STIFF	HARD/STIFF	VERY HARD/STIFF	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED	CALCAREOUS	OTHERS	
0-3	1	BAG	FILL																									1		
3.0	35/50	CAL	FILL																									0		
5.7	2/5	CAL	FILL	X				10		10		30	60					BROWN		X								.3		
8.6-10.6	1	ST	FILL	X									100					BROWN										2		
11.9-12.2	6/9	CAL	FILL	X									100					BROWN GREY		X								.3		
17.8-19.8	1	ST	FILL	X									100					BROWN GREY										2		
20.9	10/19	CAL	FILL	X									100					BROWN GREY				X						.3		
26.2-28.2	1	ST	FILL	X									100					BROWN GREY										2.8		
28.9	13/17	CAL	FILL	X									100					BROWN GREY				X						.3		
LVS																														

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE NO.: TH046292

PROJECT NAME: B1, B3, A3 and Landfill Dams Analysis PAGE 2 OF 2

RIG GEOLOGIST: LVS

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 41.0

DEPTH TO WATER TABLE (FT): 29.2

DATE: 10/5/92

DEPTH (FT)		SOIL	SOIL DESCRIPTION
FROM	TO	SYMBOL	
29.2	41.0	FILL	CLAY, VERY STIFF, HI PLASTICITY, TRACE TO SOME (0-10%) TRACE SANDY, FINE TO VERY FINE, MOIST, BROWN/GREY TRACE SILT CLASTS FR STAINING. THROUGHOUT
41.0	48.6	CS	CLAYSTONE BEDROCK, VERY HARD, MOIST, DK GREY
LVS			

[illegible]

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

A-35

BOREHOLE LOG

BOREHOLE NO.: TH046392

PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 1

RIG GEOLOGIST: LVS

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 41

DEPTH TO WATER TABLE (FT): 32.0

DATE: 10/1/92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL SYMBOL	SOIL DESCRIPTION
FROM	TO		
0	5	FILL	GRAVEL, FINE TO MEDIUM, SUBROUND, SANDY, FINE TO COARSE, ANGULAR SILTY, MEDIUM PLASTICITY, DRY BROWN
5	14 4 ft LVS	FILL	CLAY, MEDIUM TO HIGH PLASTICITY, STIFF ^{LVS} VERY STIFF, GRAVELLY, FINE TO COARSE, SUBANGULAR, SANDY, FINE TO MEDIUM, ANGULAR TO SUBROUND, MOIST, GREY BROWN w/SOME OLIVE, BLACK, TAN
14	41	FILL	CLAY, STIFF TO VERY STIFF, MEDIUM TO HIGH PLASTICITY, SANDY, COARSE TO FINE, SUBROUND TO SUBANGULAR, FRAGILE ^{LVS} STIFF, MOIST, BROWN, GREY, OLIVE TRALSILT, SOME FE STAINING, TOPSOIL AT 28'-29' w/ROOTS WATER AT 32.0' POSSIBLE ANHYDRITE IN VOIDS @ 33.0'
41		CS	CLAYSTONE, HARD TO VERY HARD, HIGH PLASTICITY (SHAVINGS) SLIGHTLY MOIST, DARK GREY/BLUE

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (-#200)	BEDROCK			COLOR	HARDNESS					CONDITION							RECOVERY (FT)		
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD	STIFF	VERY HARD	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED	CALCAREOUS		OTHERS	
5.7	19/14	CAL FILL	FILL	X				20	5	5	10	30	50				BROWN														BLACK	.3
7.9	53/30	CAL	FILL																													.0
11	-	ST	FILL																													.0
14	10/10	CAL	FILL																													.0
14.7	4/8	CAL	FILL	X				20					80				BROWN															.3
14-16	-	BAG	FILL	X									100				BROWN															2.0
20.6-22.6	-	ST	FILL	X									100				BROWN GREY													OLIVE		2.0
23.7	11/19	CAL	FILL	X				10	10				90				BROWN GREY															.3
28.1	12/14	CAL	FILL	X									100				BLACK													ROOTS		.3
32.5	10/13	CAL	FILL	X									100				BROWN BLACK													WATER		.3
36.7	2A/9	CAL	FILL	X				20	20				80				BROWN GREY															.3
40.7	18/33	CAL	CS	X												X	DARK GREY/BLUE															.3
50/5"		CAL	CS													X	DARK GRAY/BLUE															.3

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4025-210-542) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE NO.: TH046492 PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 1
RIG GEOLOGIST: Michael May SUBCONTRACTOR: Woodward-Clyde
DEPTH TO BEDROCK (FT): 14.0 DEPTH TO WATER TABLE (FT): NE DATE: 10-26-92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL	SOIL DESCRIPTION
FROM	TO	SYMBOL	
0	4	Fill	Gravel, fine to coarse, angular to subround, sandy, fine to medium grained, angular to subangular, clay, low plasticity, medium dense, moist, brown, light gray, black.
4	14	Fill	Clay, medium to high plasticity, sandy, fine to medium grained, angular to subangular, moist, light gray, dark gray, brown.
14	19.5	CS	Claystone Bedrock, low to medium plasticity, sandy, fine grained, angular to subangular, moist, light gray, dark gray, brown, hard.

CLASSIFICATION OF INDIVIDUAL SAMPLES

[illegible]

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log. Form) (9/4/92 10:59 AM)

B-1 NE
PE hole BOREHOLE LOG
BOREHOLE NO.: T4046592 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 2
RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde
DEPTH TO BEDROCK (FT): 25.0 DEPTH TO WATER TABLE (FT): 20.0* DATE: 10/7/92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL SYMBOL	SOIL DESCRIPTION
FROM	TO		
0	7	FILL	CLAY, MEDIUM PLASTICITY, SANDY, FINE, SUBGROUND, SLIGHTLY SLIGHTLY MOIST, BROWN, GREY, BLACK, WHITE, TRACE Fe, TRACE GRAVEL, COARSE SUBGROUND, STIFF
7	15.5	FILL	CLAY, MEDIUM TO HI PLASTICITY, STIFF, SANDY, FINE, SUBGROUND MOIST, BROWN, GREY, IRON STAINING
15.5	20	FILL	CLAY, HIGH PLASTICITY, STIFF TO VERY STIFF, MOIST, BROWN, GREY, BLACK
20	25	FILL	SAND/GRAVEL, WELL GRADED, FINE TO COARSE, ANG. LAR TO SUBGROUND, VERY WET, BROWN
25	26	CS	CLAYSTONE BEDROCK, MEDIUM HARD TO HARD, MOIST, GREY BROWN, IRON STAINING
			LVS

CLASSIFICATION OF INDIVIDUAL SAMPLES

CLASSIFICATION OF INDIVIDUAL SAMPLES																													
TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (#200)	BEDROCK			COLOR	HARDNESS					CONDITION						RECOVERY (FT)
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD	STIFF	VERY HARD	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED	
3.7	8/9	CAL	FILL	X				20	X			80				BROWN GREY											BLACK Fe	.3	
4.9-6.9	-	ST	FILL	X				30	X		T	70				BROWN GREY											BLACK WIRE Fe	1	
0-5	-	BKT	FILL	X				25	X			75				"											"	-	
8-10	-	ST	FILL	X				15	X			85				BROWN GREY											Fe	1.5	
11.2	6/10	CAL	FILL	X				10	X			90				BROWN GREY											Fe	.3	
5-10	-	BKT	FILL	X				10	X			90				"											"	-	
13.5-15.5	-	ST	FILL	X				5	X			95				BROWN GREY											Fe	2	
16.2	8/13	CAL	FILL	X								100				BROWN BLACK				X									.3
10-15	-	BKT	FILL	X								100				BROWN GREY													-
18.2-20.2	ST	ST	FILL		X							100				BLACK													2
23.5-25.5	8/10	CAL	FILL				X	100		17	17	17	50			BROWN											SW/GW	.3	
25.7	18/30	CAL	CS	X								100				BROWN GREY			X	X									.3
15-20	BKT	BKT	FILL	X	X							100				BROWN BLACK													-

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

T - TRACE

* - TOE/LATERAL DRAIN

BOREHOLE LOG

BOREHOLE NO.: 7HQ4659Z

PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 2 OF 2

RIG GEOLOGIST: LVS

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 25

DEPTH TO WATER TABLE (FT): 20*

DATE: 10/8/92

CLASSIFICATION OF LAYERS

[illegible]

CLASSIFICATION OF INDIVIDUAL SAMPLES

[illegible]

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

* - TOE DRAIN

BOREHOLE NO.: TH046692 PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 1 OF 3
RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde
DEPTH TO BEDROCK (FT): 27.1 N/E DEPTH TO WATER TABLE (FT): 8.0 DATE: 10/6/92

DEPTH (FT)		SOIL	
FROM	TO	SYMBOL	SOIL DESCRIPTION
0	3.5	FILL	GRAVEL, FINE TO COARSE, ANGULAR TO SUBROUND, CLAYEY, HI PLASTICITY, MOIST, BROWN
3.5	7.0	FILL	CLAY, HIGH PLASTICITY, GRAVELLY, FINE TO MEDIUM, SUBANGULAR TO SUBROUND, SANDY, FINE TO COARSE, ANGULAR TO SUBROUND, MOIST, BROWN & BLACK
7.0	17.0	FILL	CLAY, HI PLASTICITY, SLIGHTLY WET TO WET, STIFF, GREY TO DARK GREY, TRACE ROOTS, 10-20% SAND, FINE @ 17'
17.0	27.1	NATIVE FILL	CLAY/GRAVEL 50% CLAY, 50% GRAVEL CLAY HI PLASTICITY GRAVEL SUBANGULAR TO SUBROUND, COARSE VERY WET, BLACK/DARK GREY
			LVS

[illegible]

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: TH046692 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 2 OF 3

RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): NE DEPTH TO WATER TABLE (FT): 8.0 DATE: 10/6/92

PROJECT NAME: B1, B3, A3 and Landfill Dams Analysis PAGE 2 OF 3

SUBCONTRACTOR: Woodward-Clyde

DATE: 10/6/92

[illegible]

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (-#200)	BEDROCK			COLOR	HARDNESS					CONDITION					RECOVERY (FT)	
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD	VERY HARD	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED		CALCAREOUS
15-20	-	BKT	FILL			X	X						100				DEGREY BLACK												1
23.7	8/17	CAL	FILL				X					50	50				DARK GREY											W	
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(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: T11046692

PROJECT NAME: B1 B3 A3 and Landfill Dams Analysis PAGE 3 OF 3

RIG GEOLOGIST: LVS

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 27

DEPTH TO WATER TABLE (FT): 8

DATE: 10/7/92

CLASSIFICATION OF LAYERS

[illegible]

CLASSIFICATION OF INDIVIDUAL SAMPLES

[illegible]

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

B-1 Toe

BOREHOLE LOG

BOREHOLE NO.: TH046792

PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 1

RIG GEOLOGIST: Mike May

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 14.0

DEPTH TO WATER TABLE (FT): NE

DATE: 10-22-92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL SYMBOL	SOIL DESCRIPTION
FROM	TO		
0	2	Fill	Gravel, fine to coarse, angular to subround, sandy, fine to medium grained, angular to subangular, medium dense, dry to moist, brown.
2	14.0	Fill	Clay, Low to medium plasticity, sandy, fine to medium grained, angular to subangular, stiff to very stiff, moist, brown, gray, dark gray, iron staining
14.0	19.7	CS and SS	Sandstone, fine to medium grained, subangular to subround, clayey, moist, brown, dark gray, iron oxide staining, very hard
			Claystone Bedrock, sandy, fine to medium grained, subangular to subround, very hard, moist, brown, gray, dark gray.

CLASSIFICATION OF INDIVIDUAL SAMPLES

TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (-#200)	BEDROCK			COLOR	HARDNESS					CONDITION					RECOVERY (FT)		
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD	VERY HARD	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED		CALCAREOUS	OTHERS
1	6/16	Cal	Fill	X				30	X			40	30				Brown													.3
3	NA	ST	Fill	X				20	X				80				Brown													1.0
4.5	8/15	Cal	Fill	X				20	X			20	60				Brown													.3
0-5	NA	Bucket	Fill	X				20	X			10	70				Brown													NA
9	4/10	Cal	Fill	X				10	X				90				Brown, Gray, Black													.3
5-10	NA	Bucket	Fill	X				20	X				80				Brown, Gray, Black													NA
13	9/28	Cal	Fill	X				10	X				90				Brown													.3
10-15	NA	Bucket	Fill	X				10	X				90				Brown													NA
16	27/502"	Cal	SS and CS	X				10	X				90			X	Brown					X								.3
19	40/503"	Cal	SS and CS	X				10	X				90			X	Brown					X							FeOxide Staining	.3

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:39 AM)

BOREHOLE NO.: THD4689Z PROJECT NAME: B1, R3, A3, and Landfill Dams Analysis PAGE 2 OF 2
RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde
DEPTH TO BEDROCK (FT): 21 DEPTH TO WATER TABLE (FT): NE DATE: 10/13/92

PROJECT NAME: B1, R3, A3 and Landfill Dams Analysis PAGE 2 OF 2

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO WATER TABLE (FT): NE

DATE: 10/13/92

[illegible][illegible]

2 S = SLIGHT M = MODERATE H = HIGHLY

B-3 Crest
South BOREHOLE LOG

BOREHOLE NO.: TH046992 PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 1 OF 2
 RIG GEOLOGIST: LVS SUBCONTRACTOR: Woodward-Clyde
 DEPTH TO BEDROCK (FT): 25 DEPTH TO WATER TABLE (FT): 20 DATE: 10/12/92

CLASSIFICATION OF LAYERS

DEPTH (FT)		SOIL SYMBOL	SOIL DESCRIPTION
FROM	TO		
0	2.5	FILL	GRAVEL FINE TO COARSE VERY ANGULAR (BROKEN) TO SUBROUND CLAYEY MEDIUM PLASTICITY DRY TO SLIGHTLY MOIST BROWN DARK GREY
2.5	13	FILL	CLAY STIFF TO VERY STIFF, MEDIUM PLASTICITY, SANDY FINE TO COARSE, ANGULAR TO SUBROUND, DRY TO SLIGHTLY MOIST, BROWN, GREY
13	25	FILL	CLAY, STIFF TO VERY STIFF, HIGH PLASTICITY, MOIST TO VERY MOIST, DARK GREY, ^{SOME} GREEN GREY, BLACK, BROWN, SOME GRAVEL 21'-25'
25	31	MS	SILTSTONE, VERY HARD, SLIGHTLY MOIST, BROWN TO DARK BLUE LVS

CLASSIFICATION OF INDIVIDUAL SAMPLES

CLASSIFICATION OF INDIVIDUAL SAMPLES																													
TOP DEPTH (FT)	BLOW COUNT	SAMPLE TYPE	SOIL SYMBOL	MOISTURE				% SAND	GRADING				% FINES (#200)	BEDROCK			COLOR	HARDNESS					CONDITION						RECOVERY (FT)
				DRY	MOIST	VERY MOIST	WET		FINE	MEDIUM	COARSE	GRAVEL		SANDSTONE	SILTSTONE	CLAYSTONE		VERY SOFT	SOFT	FIRM	HARD/STIFF	VERY HARD/STIFF	CEMENTED	MASSIVE	STRATIFIED	POROUS	FRACTURED	CALCAREOUS	
2	29/18	CAL	FILL	X				20	80			80				DARK GREY BROWN													3
4	4/13	CAL	FILL	X				10	90			90				BROWN GREY													3
0-5	—	BKT	FILL	X				30	10	10	10	30	40			BROWN													1
6	5/18	CAL	FILL	X				30	10	10	10	70				BROWN													3
5-10	—	BKT	FILL	X				90			10	90				BROWN													1
9	12/10	CAL	FILL																										0
10	11/11	CAL	FILL	X				30	6	15		70				BROWN													0
12	8/10	CAL	FILL	X				20	10	10		80				BROWN DARK BROWN													3
13-15	—	ST	FILL	X								100				DARK GREY													0
10-15	—	BKT	FILL	X				10	10			90				BROWN													1
17-19	—	ST	FILL	X	X							100				GREEN NOT BLACK													0
20	6/6	CAL	FILL		X							10	90			GREEN DARK GREY			X	X									3
15-20	—	BKT	FILL		X							10	90			↓			X	X									1

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log Form) (9/4/92 10:59 AM)

BOREHOLE LOG

BOREHOLE NO.: TH046992

PROJECT NAME: B1, B3, A3, and Landfill Dams Analysis PAGE 2 OF 2

RIG GEOLOGIST: LVS

SUBCONTRACTOR: Woodward-Clyde

DEPTH TO BEDROCK (FT): 25

DEPTH TO WATER TABLE (FT): 20

DATE: 10/12/92

CLASSIFICATION OF LAYERS

[illegible]

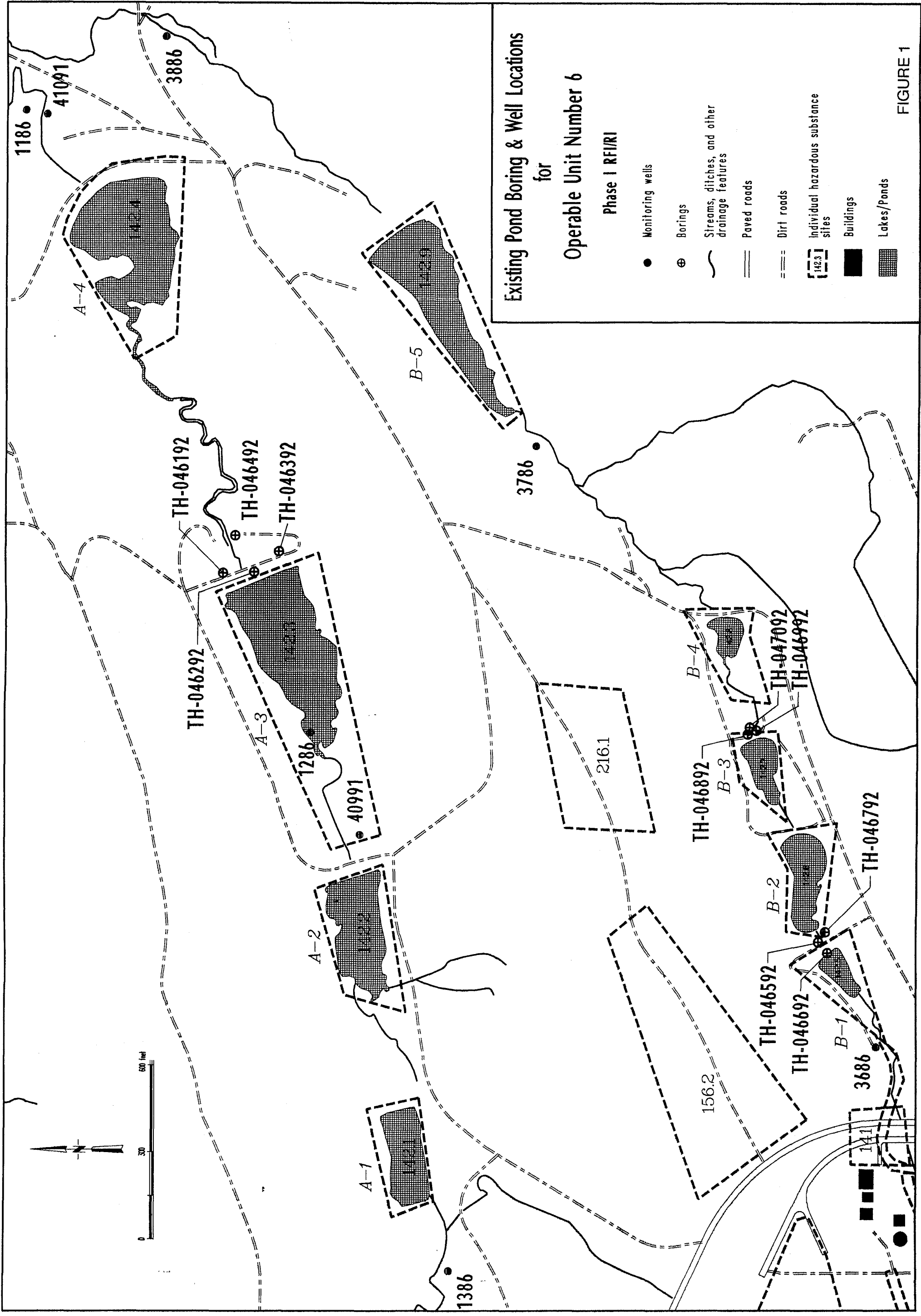
CLASSIFICATION OF INDIVIDUAL SAMPLES

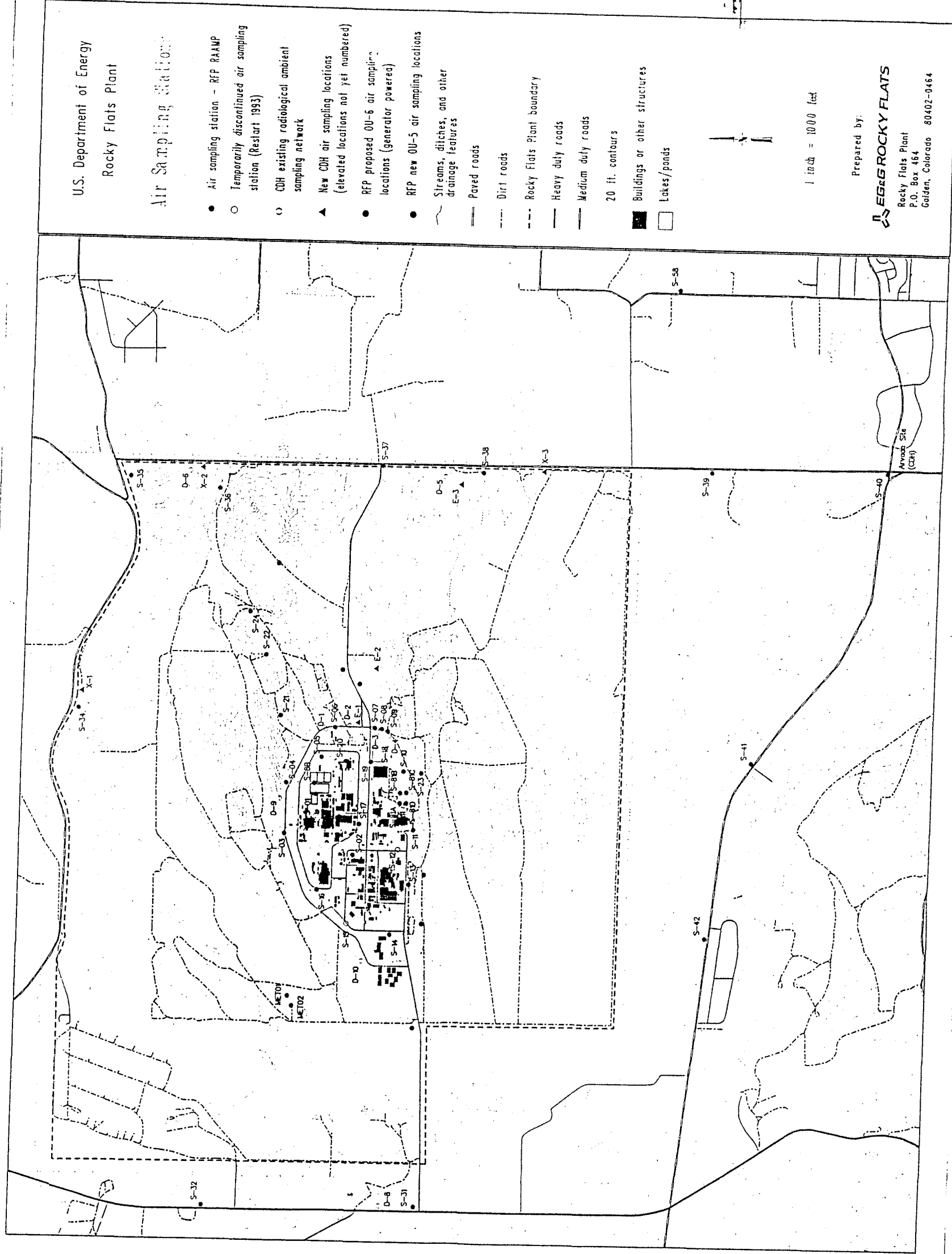
[illegible]

NOTES: 1. SAMPLE TYPES: SS = 2" O.D. SPLIT SPOON CAL = CALIFORNIA SPOON ST = SHELBY TUBE

2. S = SLIGHT M = MODERATE H = HIGHLY

(4035-210-542) (W-C Log, Forum) (9/4/92 10:59 AM)





U.S. Department of Energy
Rocky Flats Plant

Air Sampling Stations

- Air sampling station - RFP BAAMP
- Temporarily discontinued air sampling station (Restart 1993)
- CDH existing radiological ambient sampling network
- ▲ New CDH air sampling locations (elevated locations not yet numbered)
- RFP proposed OU-6 air sampling locations (generator powered)
- RFP new OU-5 air sampling locations

Streams, ditches, and other drainage features

Paved roads

Dirt roads

Rocky Flats Plant boundary

Heavy duty roads

Medium duty roads

20 ft. contours

Buildings or other structures

Lakes/ponds

1 inch = 1000 feet

Prepared by:

EG&G ROCKY FLATS
Rocky Flats Plant
P.O. Box 464
Golden, Colorado 80402-0464

FIGURE 2

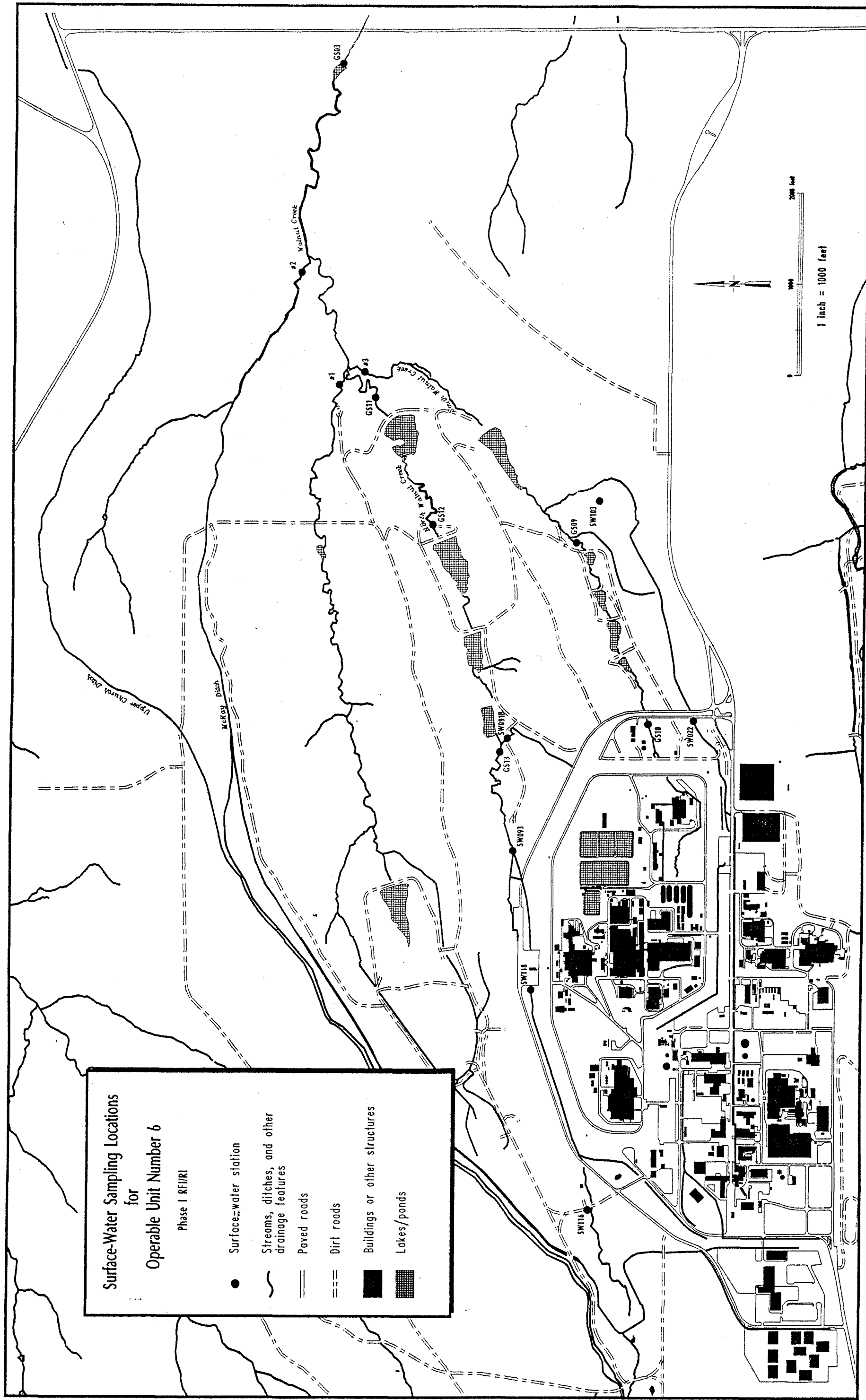


FIGURE 3